

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:)	Atty. Docket No.:
SHI ET AL.)	78508(36-115 US)
)	
Serial No. 09/891,886)	Art Unit: 2617
)	
Filing Date: 06/26/2001)	Examiner:
)	J. Laye
Confirmation No. 2419)	
)	
For: UNIVERSAL TEST METER FOR)	
DIGITAL SIGNAL DISTRIBUTION)	
SYSTEMS)	
)	

DECLARATION UNDER 37 CFR 1.131(c)

Mail Stop Amendment
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

I, Pignan Shi, declare that all statements made of my own knowledge are true, and that all statements made on information and belief are believed to be true:

1. I am an applicant of the above-identified patent application and an inventor of the subject matter described and claimed therein.
2. Prior to 5th June 2000, I along with Eric M. Sadowski conceived the idea in the United States of America as described and claimed in the above-identified application.
3. The idea of a Universal Test Meter for Digital Signal Distribution Systems was conceived during internal design

discussions in December 1999 within the WWG Indianapolis project named "Triad", this being the CATV QAM analyzer. The conceived idea was recorded in Lab Notebook Number E397 in pages 121 - 122 on 7th February 2000, a copy of which is enclosed as Exhibit A.

4. The invention was granted approval by the Patent Committee of WWG Cable Networks Division on 5th April 2000 with the Docket Number 1504-0059 to proceed to the application stage, a copy of which is enclosed as Exhibit B.

5. A comprehensive patent search to determine the patentability of the invention was completed by Maginot, Addison and Moore, Patent and Trademark Attorneys, on 3rd August 2000. The search concluded that patent protection was available for various aspects of the subject invention, a copy of which is enclosed as Exhibit C.

6. On June 26, 2001, United States Patent Application No. 09/891,886 was filed relating to the present invention.

7. I acknowledge that willful false statements and the like are punishable by fine and/or imprisonment, and may jeopardize the validity of the application or any patent issuing therefrom.

Sworn at ...,
on this 25 day of Aug 2006

Ruth Weather
Notary Public - Notary Seal
Comm Number 541168
Expires May 26, 2013

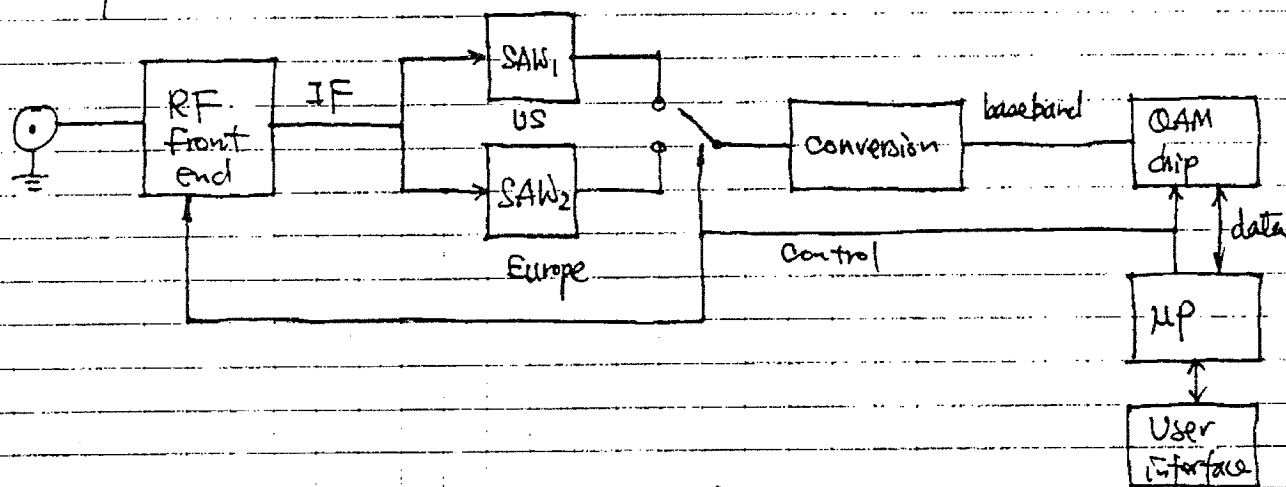

Pignan Shi

TITLE Universal design ^{of} ~~for~~ QAM meterProject No. 4140
Book No. E397

121

From Page No. — Eric & I have talked about this idea, probably as early as July 1999. At that time, even until today, the products out there have one meter for US, and another for Europe. One example is Tektronix DMA120 & DMA121. Our idea is to use an universal chip, with ~~paper~~ switched SAW filters, and to build one box solution for both US & Europe. The software will change the configurations as requested by the user to fit different standards.

The system is shown below. The micro-processor controls the RF front



end to tune to the channel under test. The selected digital QAM signal is converted to IF, and then pass through two SAW filters. The micro-processor also controls the switch to choose one of the outputs of the filters: one for US and the other for Europe. The filtered signal is then converted to baseband, and then fed to

To Page No. 122

Witnessed & Understood by me,

Eric M. Sadowski

Date

2/8/2000

Invented by

Pingnan Shi & Eric Sadowski

Recorded by

Pingnan Shi

Date

2/7/2000

Project No. 4140Book No. E397TITLE Universal design of QAM meter

From Page No. 21 the QAM receiver chip. The micro-controller changes the register settings of the chip according to the desired standard. It also reads informations such as MER, I/Q data, equalizer tap values, FEC readings, etc. and from the chip and then send them to the user interface.

We later in ~~the~~ around Oct. 1999 found such a universal QAM receiver chip, which is Broadcom's BCM 3125. After evaluation, the Triad team decided to use this chip and then build an universal meter for both US and Europe.

To Page No. _____

Witnessed & Understood by me.

Eric M Sadowski

Date

2/8/2000

Invented by

Pingnan Shi
Eric Sadowski

Recorded by

Pingnan Shi

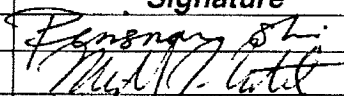
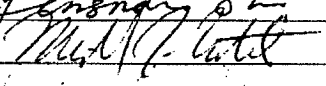
Date

2/7/2000

Cable Networks Division

Invention Disclosure For Patent Committee Review

Confidential and Proprietary

Inventor(s) must not write in this section (Reserved for Patent committee use)		
Disclosure Number		
Date		
Inventor(s) Name(s)	Home Address	Citizenship
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Pingnan Shi	3387 Buckmoor Pkwy Greenwood, IN 46143-9244	Canada
Patent Committee Application Approval		
Name	Signature	Date
Pingnan Shi		4/5/00
Mike Vitale		4/5/00
Doug Franchville		

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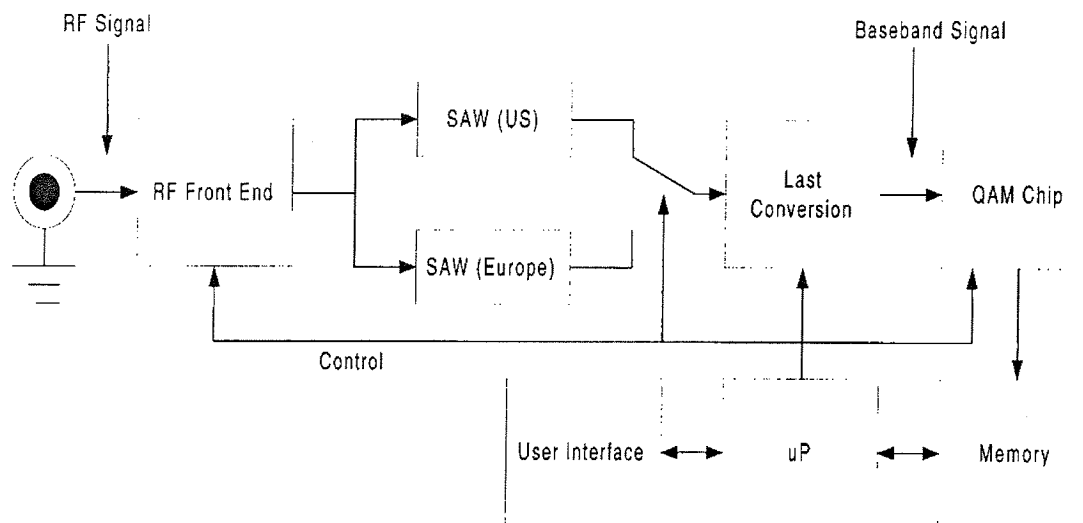
1. The Invention

1.1. Title of the invention: (Limit to ten words)

Universal Handheld QAM meter for Digital Cable Television

1.2. Describe and illustrate the invention, including its operation, purpose, and environment. (Attach copies of the laboratory notebook pages in the Appendix B)

The invention consists of a branched receiver that has one path to condition a United States standard CATV signal, and one path to condition other global standard, such as Europe, CATV signals. This receiver architecture would allow for a single unit to have the ability to test many formats and hence be a single unit that can be used globally for different standards. The system block diagram of this invention is shown below.



1.3. What is the earliest conception date? (Attach earliest laboratory notebook entry, drawings, etc., to support dates).

Dec. 1999, during internal design discussions.

1.4. What problem does the invention solve?

The invention would provide a single piece of test equipment that could be used globally. The present industry solutions have a unit designed for the US market or for the other global standards but not one that will accommodate both standards in one unit.

1.5. Was the invention developed in conjunction with a product or process currently under development by WWG, Inc.?

The invention was developed during the WWG Indianapolis project called Triad. Triad is the CATV QAM analyzer.

1.6. Has a prototype of your invention been built?

1.6.1. What is the date the invention was first prototyped?

The invention has not been prototyped.

1.6.2. What is the present location of the prototype?

N/A

1.6.3. Have the test results been recorded? (Attach Lab Notebook test results in Appendix D)

N/A.

2. Background of the Invention

2.1. Have you researched existing technology (prior art)? List your resources and attach results to Appendix A.

A patent search was done using the following keywords on the IBM patent search site:

On USPTO:

- CATV Analyzer
- Selectable Receiver
- QAM Analyzer
- Global Receiver
- Universal Receiver

On PCT:

- CATV Analyzer
- Selectable Receiver (and) CATV
- QAM Analyzer (and) CATV
- Global Receiver (and) CATV
- Universal Receiver

Another patent search was done on both USPTO and international patent offices using the following keywords using Nerac's service:

- CATV analyzer
- Selectable Receiver (and) CATV
- QAM Analyzer (and) CATV
- Global Receiver (and) CATV
- Universal Receiver

No patents were found that are relevant to our invention.

2.2. Describe existing technology that addresses the same problem solved by your invention (attach article, patent, catalog sheet, or other documentation).

No documentation has been identified.

2.3. Describe the differences (e.g. components, circuits, process steps, cost...) between your invention and existing technology.

The invention uses existing technology in a fashion not found in prior literature. The idea is similar to several of WWG's existing products, but the application for multiple digital CATV formats is the new concept.

3. Utility to WWG or it's customers

3.1. What are the potential uses and benefits of the invention to WWG and/or WWG's customers?

The benefits to the customer are as follows:

1. Single product for larger customers.

The benefits for WWG are as follows:

1. Reduces internal WWG complexity by only having to launch one product with one set of hardware and software.

4. Disclosure

4.1. Has your invention been disclosed to anyone outside WWG, Inc.?

4.1.1. When?

N/A

4.1.2. How?

4.1.3. To whom?

4.1.4. Was a non-disclosure agreement signed? (Attach copies to Appendix C)

4.2. Did this invention result from work on a project with a third party?

4.2.1. Yes or No

No

4.2.1.1 If yes, what was the project name?

4.2.1.2 If yes, who was the contracting party?

4.3. Other Applicable Documents

5. Appendix A (Patent Search Results)

- List Key Words (companies, technology categories, etc) used for search, and Patent regions searched (USPTO, PCT, etc).
- Attach copies of all pertinent search documentation in this section.

X = AND, + = OR	1 st	x/+	2 nd	x/+	3 rd
+	CATV	x	Analyzer		
+	Selectable	x	Receiver	x	CATV
+	QAM	x	Analyzer	x	CATV
+	Global	x	Receiver	X	CATV
+	Universal	x	Receiver	X	CATV
+					
+					
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Search Region	Regions Searched
USPTO	Yes
PCT	Yes
Other:	

- List Lab Notebook number, or other document reference. If other than lab notebook, list where documentation is stored.
- Attach copies of all pertinent documentation in this section.
- Verify that all Lab Notebook entries are signed (inventor and witness) and dated.

[illegible]

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MAGINOT, ADDISON & MOORE

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August 3, 2000

Mr. Pingnan Shi
WWG Cable Networks Division
5808 Churchman Bypass
Indianapolis, Indiana 47203-6109

Re: Patentability Opinion
Invention: Universal QAM Meter for Digital CATV
Docket No.: 1504-0059

Dear Pingnan:

As you requested, we have conducted a patent search to determine the patentability of the above invention. The search was based on the invention disclosure document dated April 5, 2000.

As will be discussed in greater detail below, it is our conclusion, based upon the enclosed research, that patent protection is available for various aspects of the subject invention.

In broad general terms, the UNIVERSAL QAM METER FOR DIGITAL CATV invention is a meter for digital CATV signals that is operable to analyze digitally encoded CATV signals transmitted according to various global standards.

In particular, the meter is operable to analyze digitally encoded CATV signals or channels utilizing selectable signal conditioning circuits, depending on the format of the CATV signal under test. In one form, the signal conditioning circuits include SAW filters operable to filter particular bandwidths according to the standard of the particular CATV system. Different regions (i.e. countries) utilize different channel bandwidths to transmit CATV television signals/channels. The SAW filters correspond to each region or bandwidth. Once the signal conditioning circuit has been selected, an output of a corresponding SAW filter is fed to a digital decoder circuit such as a QAM decoder. The QAM decoder is preferably operable to decode all three (3) international QAM standards in accordance with ITU-T J.83. The meter is operable to analyze various signal parameters and is preferably under control of a processing unit in communication with a user interface.

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A search was conducted in both the IBM Patent Server Database and the Patent Database maintained by the United States Patent and Trademark Office (USPTO). The search was therefore limited to U.S. patents issued after 1971. Given the nature of the present invention, however, the date limitation should be of little or no consequence. A target keyword search was performed, as well as searches in USPTO classes 324, 348, 375, and 702.

Based upon our experience, these classes and subclasses were the most pertinent subject matters areas. However, you should be aware that any patent search, including the present search, could be extended to include additional classes or subclasses. In addition, although we deem the above databases to have a reliability exceeding that of the United States Patent and Trademark Office Search Room, there is a possibility that certain patents have been improperly indexed or excluded from those databases. Furthermore, applications for patents are confidential and therefore are not searchable. Accordingly, there is always a possibility that a pending patent application could include information relevant to the patentability of the above-referenced invention.

In any event, the present search identified the following references, copies of which are enclosed for your review. A short discussion of each reference's relevant features is followed by an opinion regarding patentability.

<u>Patent No.</u>	<u>Inventor(s)</u>	<u>Issue Date</u>
4,685,065	Braun et al.	August 4, 1987
5,073,822	Gumm et al.	December 17, 1991
6,041,076	Franchville et al.	March 21, 2000
6,061,393	Tsui et al.	May 9, 2000

U.S. Patent 4,685,065 issued to Braun et al. ("Braun") shows a portable spectrum analyzer using frequency synthesis in the field to perform voltage amplitude measurements of specified channel segments in an analog multichannel configured coaxial cable environment. The spectrum analyzer is microprocessor based, provides both aural and visual outputs by means of a speaker and an LCD display, and is capable of operating in various modes. These various modes include a video and audio sweep mode, a video and audio zoom mode, and a video and audio memory mode. The absolute level of the audio signal is displayed on the LCD display while in the various modes. While in the zoom mode only, the operator may listen to the video sync buzz or the audio signal. Braun does not, however, disclose a test meter for digital CATV channels that is operable to analyze digitally encoded CATV signals transmitted according to multiple transmission standards.

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U.S. Patent 5,073,822 issued to Gumm et al. ("Gumm ") shows a cable television measurement system that utilizes a spectrum analyzer for determining both carrier-to-noise and triple beat ratios for a CATV system. The spectrum analyzer is triggered for single sweep during the vertical interval of a selected channel, and the noise amplitude, peak sync tip amplitude and frequency of the selected channel are determined. The carrier-to-noise ratio is determined from the noise amplitude and the peak sync tip amplitude. For triple beat ratio measurements, a headend unit coupled between a television signal source and a combiner in the CATV headend prior to distribution, offsets a selected channel by a predetermined frequency for a specified number of lines in the vertical interval. The triple beat ratio is determined from the triple beat amplitude and the peak sync tip amplitude. Gumm does not, however, disclose a test meter for digital CATV channels that is operable to analyze digitally encoded CATV signals transmitted according to multiple transmission standards.

U.S. Patent 6,041,076 issued to Franchville et al. "(Franchville)") shows a signal power measurement apparatus for digitally modulated (i.e. QAM) CATV signals. In one form, the signal power measurement apparatus includes an RF receiver, an A/D converter, and a digital signal processing circuit. The circuitry is operable to perform a power measurement on the digital intermediate signal, with the power measurement being representative of the power of at least a portion of a first signal that is received by the RF receiver. Franchville does not, however, disclose a test meter for digital CATV channels that is operable to analyze digitally encoded CATV signals transmitted according to multiple transmission standards.

U.S. Patent 6,061,393 issued to Tsui et al. ("Tsui") shows a method and apparatus for non-invasive testing of digital communications systems, including QAM signals. Amplitude measurements are made for multiple frequencies of a multi-frequency communication system, and converted to the time domain. An adaptive filter then seeks to match its output to the time domain representation, thereby characterizing the channel. Impedance mismatches may be precisely located. Tsui does not, however, disclose a test meter for digital CATV channels that is operable to analyze digitally encoded CATV signals transmitted according to multiple transmission standards.

As evidenced by the above patents, CATV signal test meters for both analog and digitally encoded signals (i.e. digital signals) are known. In particular, Braun and Gumm show an analog CATV signal test meter, while Franchville et al., shows a digital CATV signal test meter. However, none of the above patents teaches a test meter for digitally encoded (i.e. QAM) CATV signals that is operable to analyze the digitally encoded signals transmitted in accordance with various formats/standards.

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Accordingly, it is our opinion that patent protection should be possible for the subject invention as identified in the above paragraph. Specifically, there appears to be a patentable difference between the present invention and the above patents. In particular, patent protection is potentially possible for a test meter for digital CATV signals that is operable to analyze various transmission formats/standards of digitally modulated (i.e. QAM) signals.

It is always possible, however, that a patent examiner may be able to locate more relevant prior art not uncovered by our search and initially deny allowance of our claims. Nevertheless, we may always attempt to overcome any such denial through argument and amendment.

If you have any questions or comments about this opinion, please do not hesitate to call.

Very truly yours,

MAGINOT, ADDISON & MOORE

A handwritten signature in black ink, appearing to read "Bruce J. Bowman", written over a horizontal line.

Bruce J. Bowman

Enclosures
BJB/aev